

***Mathematics Instruction: Geometry and Number Sense Pedagogy
Cohort IV, Central
Syllabus***

Kentucky Center for Mathematics, Northern Kentucky University

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Overview

This workshop is one of 7 mathematics institutes within the Experienced Instructors Institute and is designed for KYAE instructors and instructors' aides who teach mathematics; specifically number operations/number sense and/or geometry.

Prerequisites

This workshop is intended for experienced instructors and aides (those hired before January 1, 2009). In order to participate in this workshop, you should have completed the Orientation to Adult Education online course. Also, you will be more fully prepared to participate if you have completed the TABE and OPT workshop, "Assessment to Instruction and Effective Instructional Strategies" and Foundations in Math Instruction.

Workshop Description:

Participants will explore the latest research-based practices for teaching and learning number operations/number sense and geometry. The workshop is designed as an introductory course providing an overview of instructional strategies and foundational knowledge needed to deliver research-based mathematics instruction to students.

Instructors and aides will participate in several targeted activities designed to inform and improve classroom instruction. Covering many number sense and geometry topics that concern our students, the workshop will provide instructors and aides with a toolbox of instructional strategies for improving logical thinking skills, problem solving and connecting mathematics to real-life situations. Participants will explore various formal and informal assessment tools.

Learning Goals

Participants will:

1. Gain an understanding of GED content standards in the areas of number operations/number sense and geometry.
2. Understand various research-based instructional strategies for teaching logical thinking and problem-solving.
3. Gain an understanding of connections between prior knowledge and future learning
4. Understand the need for connections across the Depth of Knowledge continuum.
5. Gain an understanding of the importance of connecting mathematics and real-life situations.
6. Be introduced to formative assessment and its use in the classroom.
7. Develop lesson plans for classroom instruction

Performance Objectives

This workshop will enable instructors and instructor's aides to:

1. Demonstrate mathematics skills and strategies in number operations/number sense and geometry instruction
2. Help answer the question "When are we ever gonna use this?"
3. Develop, apply and evaluate classroom lesson plans for teaching number operations/number sense and geometry.

Workshop Design

The workshop will combine face-to-face sessions, demonstrations of instructional strategies, distance learning, classroom application of learning and an opportunity to receive on-the-job feedback from an instructor. The components of the workshop are listed below. Specific instructions related to each are found in the Institute Schedule section of the syllabus.

- Introduction – the following will be made available on Angel by August 2 (5:00 pm EST) and must be completed by 11:55 pm, August 17:
 - Math Efficacy and Attitudes online survey—to determine the beliefs of the instructors concerning mathematics instruction.
 - Read Job-Embedded Professional Development Articles (3)
 - Introduction on Forum
- First Face-to-Face Session – two days that include an overview of the workshop syllabus, timeline and expectations. Instructional strategies and types of learning connections will be modeled, discussed and practiced throughout the institute.
- Interim #1 – a twenty-four-week session that includes:
 - Project Milestones—participants complete assigned milestones leading to the culminating classroom project.
 - Web-Conferencing—participants meet for two to four hours (1 hour sessions) via Microsoft Live! Meeting and/or Wimba or by conference call to answer/discuss/ask questions/make comments that arise during the completion of milestones and the project.
 - Support visits and/or professional learning community meetings.
- Second Face-to-Face Session – Participants will continue to explore instructional strategies, including Marzano’s “Essential Nine.” Geometry software will also be explored.
- Interim #2 – a 11-week session that includes:
 - Classroom Project—a project in which knowledge acquired in the first two face-to-face sessions will be implemented in the classroom, resulting in formal lesson plans.
 - Web-Conferencing (see above) one to two hours
 - Support visits and/or professional learning community meetings.
 - Online sharing of projects
- Culminating Event Session – a final one day session including post-testing, a showcase of classroom projects, participant sharing/discussion, and additional resources

Provided Books and Materials

- Participant binder/ handouts
- Inquiry-based curricula selections, including EmPower, Carnegie Learning and Connected Math.
- Manipulatives kits

Assignments

The workshop includes (4) main assignments: a introductory assignment (on ANGEL), at least 2 online discussions and a classroom-embedded project; which has several milestone assignments. Assignments are designed to assist participants in incorporating knowledge, strategies and tools learned in the workshop into their classroom instruction. All assignments must be completed in a timely and satisfactory manner (see scoring rubric) in order to receive credit for the workshop.

Angel Website

Angel is KYAE's online course management system. Using Angel you will be able to access the pre-test and pre-work assignment that will need to be completed three days prior to the First Face-to-Face Session. Additionally, you can download the workshop syllabus, submit assignments, obtain course information, access resources and participate in discussion.

How to get to online courses in Angel:

After you have registered for this workshop, you will receive an email on how to complete the online pre-work and pre-test in Angel. You will also get an e-mail from kyvc@kyvc.org indicating that an Angel account has been created for you giving you your username and password so you can begin taking your online courses.

When you are ready to take your course, please go to the following Website: <http://kyvae.ky.gov> or <http://www.kyvc.org>. You will see the login area in the middle of the page. If you are a new student, you will be prompted to change your password the first time you log into the system. After you successfully login, your course(s) will show up on the left hand side of that page under "Courses". To get started, click the name of the course. You may also update your personal information by clicking "Update Personal Information" under the "My Information" area.

If for some reason, your courses do not show up under "Courses" after you have logged into the system, please contact Toni Quire at 502-573-5114, ext. 113, or e-mail her at toni.quire@ky.gov.

Please note: If you cannot remember your username and password of your Angel account, please contact Toni Quire at 502-573-5114, ext. 113, or e-mail her at toni.quire@ky.gov.

Successful Completion of PD Requirements

In order to fulfill professional development requirements, participants must attend all required workshop days, including face-to-face workshops, Web-conferences and conference calls, as well as, successfully complete all projects and tasks. A scoring rubric, which will be provided to all participants at the kickoff session and posted on ANGEL, will be used to assess the project. Projects will be evaluated by the facilitator.

Facilitators will work with participants when extenuating circumstances, such as a serious illness or a death in the family, occur that prevent a participant from attending a required component of a workshop or training.

Expectations

Assignments: In order to maximize the content of the institute, participants are expected to also complete all additional components—introductory work, interim work, classroom-embedded project and support visit—prior to the assigned deadline.

Attendance: Attendance is expected at all face-to-face sessions and the Web-conferencing events. If a serious situation, such as a serious illness or a death in the family, prevents attendance at any session, participants are asked to notify Cindy Maggard in advance (when possible) of the scheduled session.

Feedback form: Following each face-to-face session, participants will complete a written survey to give feedback on the session. Participants are expected to complete the form in an open and honest manner before leaving the session.

Participation: Participants are expected to participate in lectures, discussions and activities in a manner that respects the beliefs, attitudes and feelings of fellow participants, facilitators and instructors and instructor's aides.

Policies

Cohorts: Participants join a cohort when they sign up for an institute. Cohort participants will remain as a group throughout the length of the institute. Participants may not change cohorts once the institute has begun, unless permitted by the instructor.

Inclement Weather Policy: Face-to-face sessions will be cancelled due to inclement weather only when the local county (county in which the session is to be held) school board closes schools. Please check area news channels for school closings. Should you have an immediate concern on the day of the session, please contact Cindy Maggard via cell phone at 606-316-4184.

KYAE Professional Development: For updated information regarding KYAE professional development policy and information, visit <http://www.kyae.ky.gov/educators/pd.htm>.

INSTITUTE SCHEDULE

<p><u>Pre-work</u> (August 2, 2010)</p> <p>Location: Online (Angel)</p> <p>Tasks to complete:</p> <ul style="list-style-type: none"> • Log onto Angel • Print off and review syllabus and checklist • Complete Math Efficacy and Attitudes Survey • Complete Assignment (Read articles) • Introduce yourself on the Forum 	<p><i>Due by August 17, 2010 at 11:55 pm</i></p>
<p><u>First Face-to-Face Session</u></p> <p>Location:</p> <ul style="list-style-type: none"> • Lexington, Northside Branch of the Lexington Public Library 1733 Russell Cave Road Lexington, KY 40505 <p>Learning:</p> <ul style="list-style-type: none"> • Overview of GED content standards • Review assignments • Activities that help create real-life connections <p>Resources to be given:</p> <ul style="list-style-type: none"> • Participant Binder • Inquiry-based curricula selections 	<p><i>August 19, 2010 10:00 am - 5:00 pm and August 20, 2010 10:00 am - 5:00 pm</i></p>
<p><u>Interim #1</u></p> <p>Location:</p> <ul style="list-style-type: none"> • Online, teleconference or at your center <p>Tasks to complete:</p> <ul style="list-style-type: none"> • Web-conferencing: <ul style="list-style-type: none"> ◦ Q & A on project ideas/milestones, resource-sharing • Support visit(s) or professional learning community meetings (to be scheduled with instructors) 	<p><i>October 1, 2010 and November 12, 2010 and December 10, 2010 9:00 am-10:00 am Or 1:00 pm–2:00 pm</i></p>

Second Face-to-Face Session

Location:

- Northside Branch of the Lexington Public Library

*January 27, 2011
10:00 am-5:00 pm
and
January 28, 2011
10:00 am-5:00 pm*

Learning: Marzano's "Essential Nine" will be discussed in detail.
GeoGebra will be explored

Resources to be given:

Items to bring:

- Participant Binder

Interim #2

Location:

- Online, teleconference or at your center

Tasks to complete:

- Web-conferencing:
 - Q & A on project ideas/milestones, resource-sharing
- Support visit(s) or professional learning community meetings (to be scheduled with instructors)

Classroom Project (Due by April 1):
(see rubric)

*February 25, 2011
and
April 1, 2011

9:00 am-10:00 am
or
1:00 pm-2:00 pm*

Culminating Event Session

Location: Northside Branch, Lexington Public Library

Learning:

- Share classroom projects
- Peer resource sharing

Items to bring:

- Classroom project

May 6, 2011
10:00 am – 5:00 pm

Calendar and Progress Checklist

Cohort 4, Central

Activity	Due Date	Completed ✓
Pre-work: Online Assignment posted by August 2, 2010	August 17, 2010	
First Face-to-Face Session:	August 19, 2010 10:00 a.m. - 5:00 p.m. August 20, 2010 10:00 a.m. - 5:00 p.m.	
Project Proposal	October 15	
Interim #1: Web-conferencing that supports participants' assignments by providing additional modeling of teaching and/or discussing questions regarding strategies learned Support visits/ professional learning community meetings will be scheduled.	August 21-January 26 October 1, 2010 and November 12, 2010 and December 10, 2010 9:00 a.m.-10:00 a.m. Or 1:00 p.m.-2:00 p.m.	
Second Face-to-Face Session:	January 27, 2011 and January 28, 2011 10:00 a.m. - 5:00 p.m. both days	

Online Overview	February 11	
Interim #2: Web-conferencing that supports participants' assignments by providing additional modeling of teaching and/or discussing questions regarding strategies learned Support visits/ professional learning	From January 29, 2011 through April 22, 2011 February 25 and April 1 2011	
Evaluation Draft (optional)	April 15, 2011	
Project	April 22 , 2011	
Culminating Event Session: Post-tests, showcase of classroom projects, sharing and discussion	May 6, 2011 10:00 a.m. – 5:00 p.m.	